



PD meter dedicated for gas measurement

GAS OVAL

MODELS : GAL50, 52, 53, 55, 56

GENERAL SPECIFICATION

GS.No.GBB318E-5



■ GENERAL

As a precision flowmeter for gas measurement, this meter has the same construction of the OVAL general-purpose PD flowmeter for liquids, field proven for accuracy and performance.

Specifically designed and built for gas service, it has a precision-machined measuring chamber.

Ideally suited for metering gases in general, including air, CO₂, and nitrogen.

■ FEATURES

1. A high degree of accuracy, thanks to its PD design with oval rotors.
2. With ball bearings that provide support for the rotors, it can measure with low pressure differential.
3. Equipped with a multifunction electronic register (with LCD display), it comes in battery powered (dedicated to local indication), externally powered (pulse generator built in), explosionproof and non-explosionproof type, etc.
4. By selecting the right electronic register with a pulse generator, you can build a telemetering system that best meets your needs.
5. To ensure safety in telemetering, flameproof generators are available.
6. When combined with OVAL flow computer, continuous density meter or other associated equipment, mass flow measurement of gases or equivalent flowrate measurement under standard conditions can also be achieved.



GAS OVAL-EG



GAS OVAL-EX
(Flameproof generators)

■ METER BODY SPECIFICATIONS

Item	Description
Nominal Size	15, 20, 25, 40mm
Metered fluids	Air, nitrogen, CO ₂ , city gas, LPG, etc. ※
Linearity	±1% of RD or ±1% of FS
Max. operating pressure	0.97MPa
Hydrostatic test pressure	1.47MPa
Operating temp. range	-10 to +60°C (Explosionproof model : -10 to +50°C) Display operating range : -10 to +60°C
Process connection	Flanged connections (Flange Rating JIS 10K FF)
Material	Body
	Rotors
Finish	Meter body : 2.5G 8/2

※ : Not serviceable for gases that come under high pressure gas safety regulations, corrosive gas, and oxygen.

■ APPLICABLE EN DIRECTIVES


Applicable EU Directive	Electro-Magnetic Compatibility Directive : 2004/108/EC ATEX Directive : 94/9/EC
Applicable EN standards, etc.	For Electro-Magnetic Compatibility Directive EN55011 : 1998/A1 : 1999, Group 1, Class B EN61000-6-2 : 2001 ATEX Directive : EN 60079-0:2006 EN 60079-1:2007 EN 50020:2002

OVAL Corporation

<http://www.oval.co.jp>


Head Office (Tokyo): Phone. 81-3-3360-5121. Fax. 81-3-3365-8605
Beijing Office: Phone. 86-10-5867-4711. Fax. 86-10-5867-4713
Overseas Branch Offices: Seoul, Singapore and Taipei

■ ELECTRONIC REGISTER SPECIFICATIONS

Item	Description	
	GAS OVAL-EX	GAS OVAL-EG
Menu items	①Accumulated total flow (8-digit) ②Instantaneous flowrate, L/h (mode: b1) and L/min (mode: b2) ③Resettable total flow (zero start/zero resettable, mode: C) ④Low battery alarm (A low battery indicator "  " flickers below 3.0V.) ⑤Factored pulse and unfactored pulse output (pulse generator equipped model)	
Display	7-segment, 8-digit LCD. Characters 10mm high. Total flow units L (std.), kL, m ³	
Register accuracy	Total flow : ±1 count Instantaneous flowrate : ±1% of full scale	
Display orientation	Rotatable in 90° steps	Rotatable in 90° steps and adjustable to an upward, horizontal, downward or 180° position
Output pulse	Type Open collector pulse	
	Capacity Max. : 20mADC/30V	
Transmission length	Type Unfactored, Factored	
	Factored pulse width : 1ms, 50ms, 100ms, 250ms	Unfactored pulse width : 2ms (fixed)
Power source	Pressure-resistant packing or conduit connection for the cable	Cable 1 m long furnished (4-conductor vinyl-insulated, shielded wire)
Operating temp. range	Max. 1km (CVVS : 1.25 to 2.0mm ²) Finished cable O.D. 12 mm max.	
Material	Dedicated battery pack built in. Good for 8 years approx. (With external power source, 12 to 50VDC±10%)	
Finish	-10 to +60°C	
Explosionproof configuration	AC2A-T6	Polycarbonate
Enclosure protection class	Housing: 2.5G8/2 Cover: 2.5BG5/6	Blue
	TIIS	Battery powered: Intrinsically safe Exia II BT4 External power: Flameproof and intrinsically safe ex. Exd II BT4/Exia II BT4 (※1)
	NEPSI	Battery powered: Intrinsically safe ex. II 2G EExia II BT4 External power: Flameproof safe ex. II 2G Exd II BT4
Material	IP66	
Finish	IP53 (Avoid locations exposed to the sunshine.)	

※1 : Flameproof rating while powered by an external source; intrinsic safety rating when power is switched from an external source to the internal supply.

■ FACTORED PULSE WIDTH SELECTOR TABLES

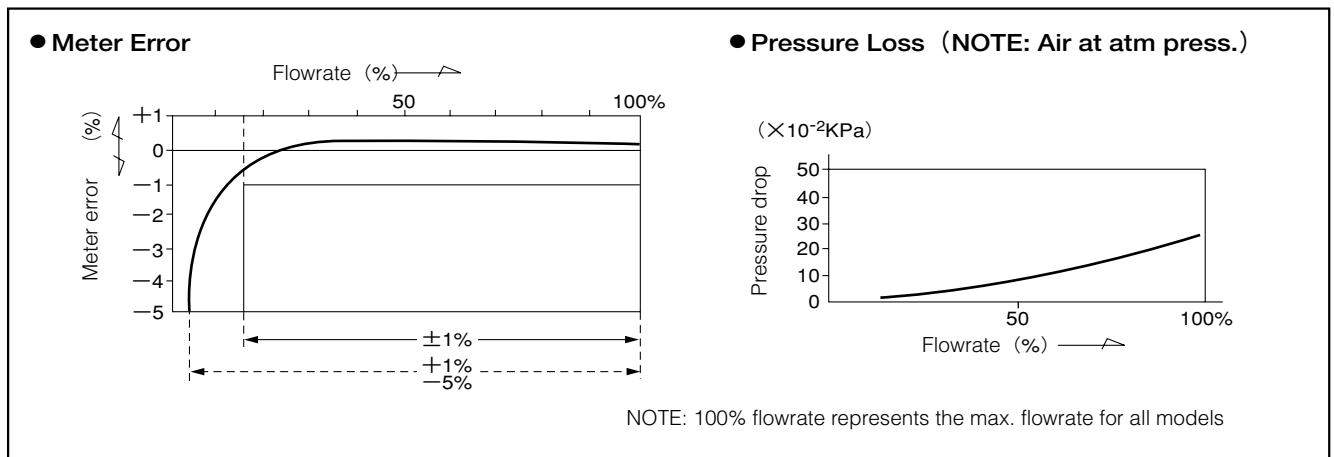
 : Option

Model	Totalizer Units L (mL)	Factored Pulse		Factored Pulse Width				Unfactored Output Pulse		Max. Flowrate m ³ /h
		Unit pulses L/P (mL/P)	Max. frequency Hz	1ms	50ms	100ms	250ms	Nom. Meter Factor mL/P	Max. frequency Hz	
50	(10)	(10)	33.3	○	—	—	—	7.908	42.15	1.2
	(100)	(100)	3.33	○	○	○	—			
	1	1	0.333	○	○	○	○			
52	(100)	(100)	8.3	○	○	—	—	19.328	43.12	3
	1	1	0.83	○	○	○	○			
	10	10	0.083	○	○	○	○			
53	(100)	(100)	15.3	○	—	—	—	35.03	43.61	5.5
	1	1	1.53	○	○	○	○			
	10	10	0.153	○	○	○	○			
55	(100)	(100)	27.8	○	—	—	—	69.21	40.14	10
	1	1	2.78	○	○	○	—			
	10	10	0.278	○	○	○	○			
56	1	1	5.6	○	○	—	—	149.31	37.21	20
	10	10	0.56	○	○	○	○			
	100	100	0.056	○	○	○	○			

■ FLOW RANGES

Model	Material		$\begin{matrix} +1 \\ -5 \end{matrix}$ % of RD	$\pm 1\%$ of RD	$\pm 1\%$ of FS
	Nom. Size	mm			
GAL50	15		75 to 1200 L/h	180 to 1200 L/h	75 to 1200 L/h
GAL52	20		190 to 3000 L/h	450 to 3000 L/h	190 to 3000 L/h
GAL53	20		320 to 5500 L/h	750 to 5500 L/h	320 to 5500 L/h
GAL55	25		650 to 10000 L/h	1.5 to 10 m ³ /h	650 to 10000 L/h
GAL56	40		1.3 to 20 m ³ /h	3 to 20 m ³ /h	1.3 to 20 m ³ /h

■ METER ERRORS AND PRESSURE LOSSES



■ PRODUCT CODE EXPLANATION

Item	Code No.												Description	
	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫		
Model	G	A	L										GAS OVAL	
Meter Size				5	0								Nominal size 15mm	
				5	2								Nominal size 20mm	
				5	3								Nominal size 20mm	
				5	5								Nominal size 25mm	
				5	6								Nominal size 40mm (※1)	
Material				L									Meter body: Aluminum alloy Rotors: Special resin	
Process connection				3	—								JIS 10K FF flanged	
Register													E X	GAS OVAL-EX (Explosionproof for outdoors)
													E G	GAS OVAL-EG (Non-explosionproof for indoors)
Explosionproof configuration													0 —	Non-explosionproof
													1 —	TIIS /Battery powered: Exia II BT4, External power: Exd II BT4 / Exia II BT4
													2 —	ATEX/ Battery powered: II 2G E Exia II BT4, External power: II 2G Exd II BT4
													7 —	NEPSI/ Battery powered: Exia II BT4, External power: Exd II BT4/ Exia II BT4
Pulse Generator													0 0	Less pulse generator
													3 0	Factored pulse width 1ms Unfactored pulse width 2ms
													5 0	Factored pulse width 50ms Unfactored pulse width 2ms
													6 0	Factored pulse width 100ms Unfactored pulse width 2ms
													7 0	Factored pulse width 250ms Unfactored pulse width 2ms

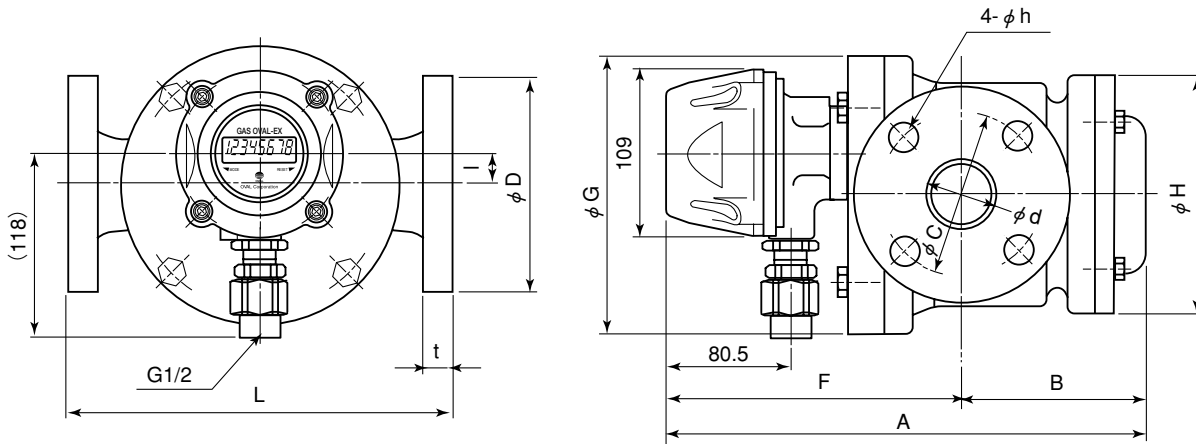
※1 : Ratings for Meter Size 56

Register: EX non-explosionproof type, if selected, meets the requirements of Category I in the Pressure Equipment Directive (PED).

Register: EG non-explosionproof type, if selected, also meets the requirements of Category I in the Pressure Equipment Directive (PED).

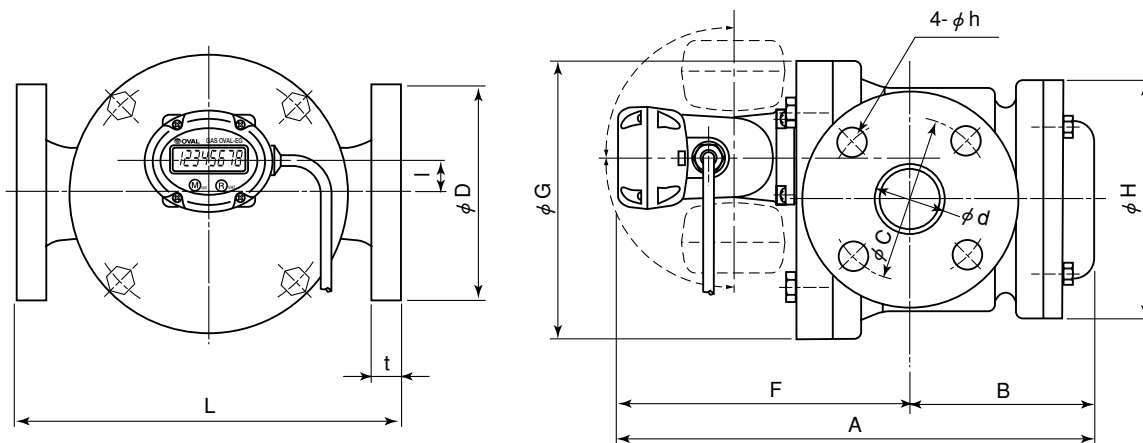
■ **OUTLINE DIMENSIONS** (Unit in mm)

● **GAS OVAL-EX**



Meter size	L	d	D	t	C	h	A	B	F	G	H	I	Approx. Weight (kg)
50	150	15	95	16	70	15	214.5	57	157.5	100	100	6.0	3.3
52	200	20	100	18	75	15	225.5	63	162.5	120	120	10.0	4.2
53	200	20	100	18	75	15	250.5	75.5	175	120	120	10.0	4.6
55	230	25	125	18	90	19	269.5	90	179.5	155	155	14.5	7.4
56	250	40	140	20	105	19	304.5	117	187.5	180	155	20.5	10.2

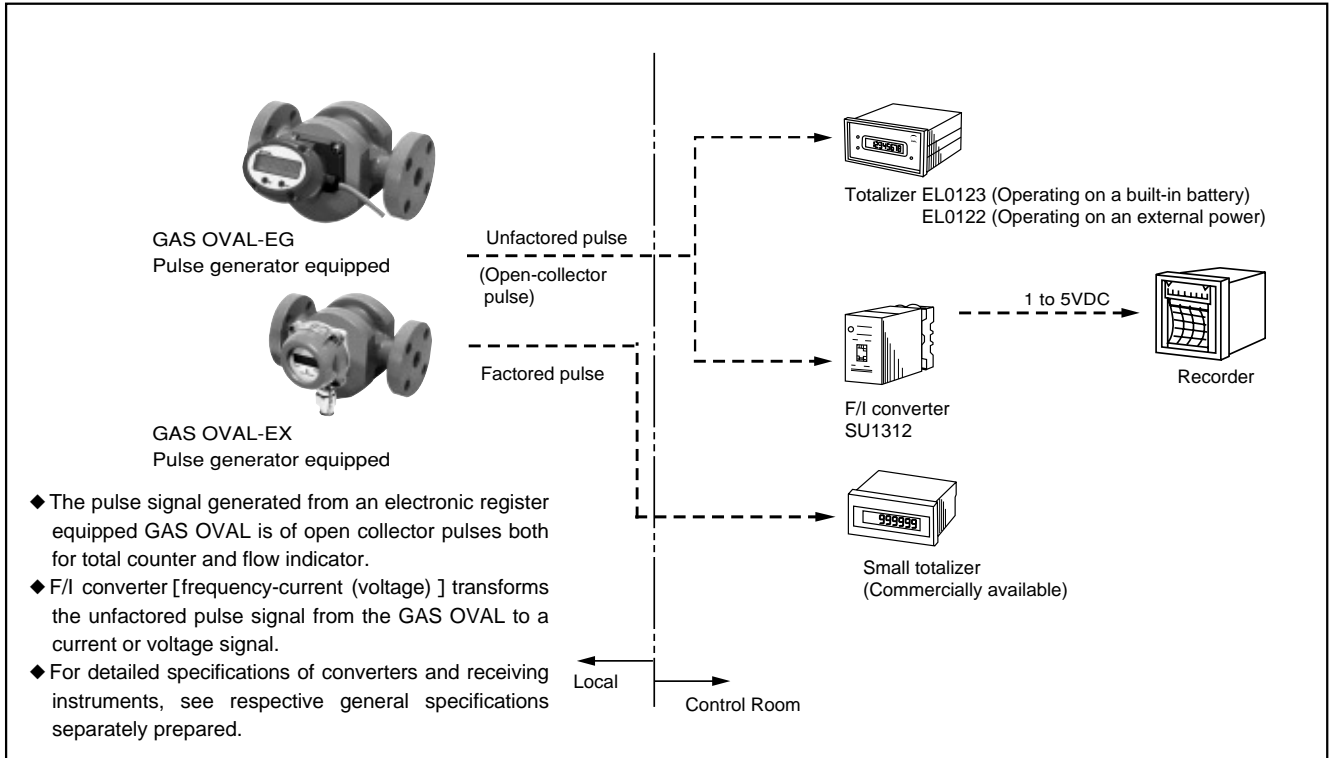
● **GAS OVAL-EG**



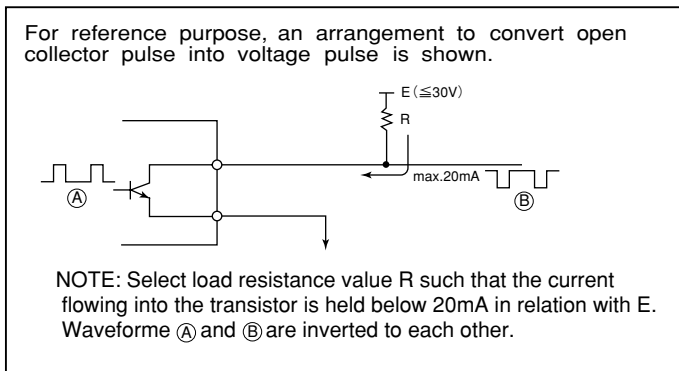
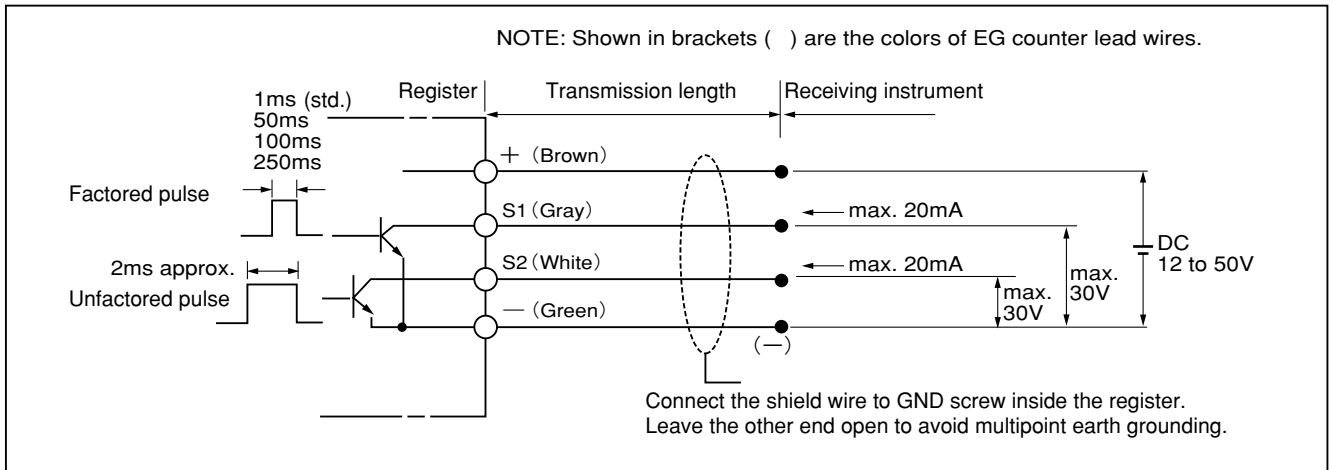
Meter size	L	d	D	t	C	h	A	B	F	G	H	I	Approx. Weight (kg)
50	150	15	95	16	70	15	211	57	154	100	100	6.0	2.1
52	200	20	100	18	75	15	222	63	159	120	120	10.0	3.0
53	200	20	100	18	75	15	247	75.5	171.5	120	120	10.0	3.4
55	230	25	125	18	90	19	266	90	178	155	155	14.5	6.2
56	250	40	140	20	105	19	301	117	184	180	155	20.5	9.0

REMOTE FLOW MEASUREMENT WITH FLOWPET-EG

Pulse generator equipped GAS OVAL provides the operator with a quick indication of the process for absolute control of water or oil supply at a remote location.



WIRING DIAGRAM



Precautions

1. Both factored pulse and unfactored pulse output is of open collector output. Use by connecting a load on the part of receiving instrument so as the rate to be held within 30VDC, 20mA max.
2. Exercise care to avoid exceeding the rating or incorrect wiring connections with regard to polarities that could result in damage to the register.
3. Depending on the type of cable, select either unfactored or factored pulses.

■ STRAINER

To prevent damage to the flowmeter from foreign solids and insure long life, use a strainer immediately upstream of the meter.

● Specification

Item		Specification
Nominal Size		15, 20, 25, 40mm
Max. Operating Pres.		0.97MPa
Test Pressure		1.47MPa
Flange Type		JIS 10K FF
Materials	Body	Copper Alloy (BC6)
	Net	SUS 304 (Mesh 100 or 200)
Finish		Munsell 7.5G 7/2.5

● Dimensions

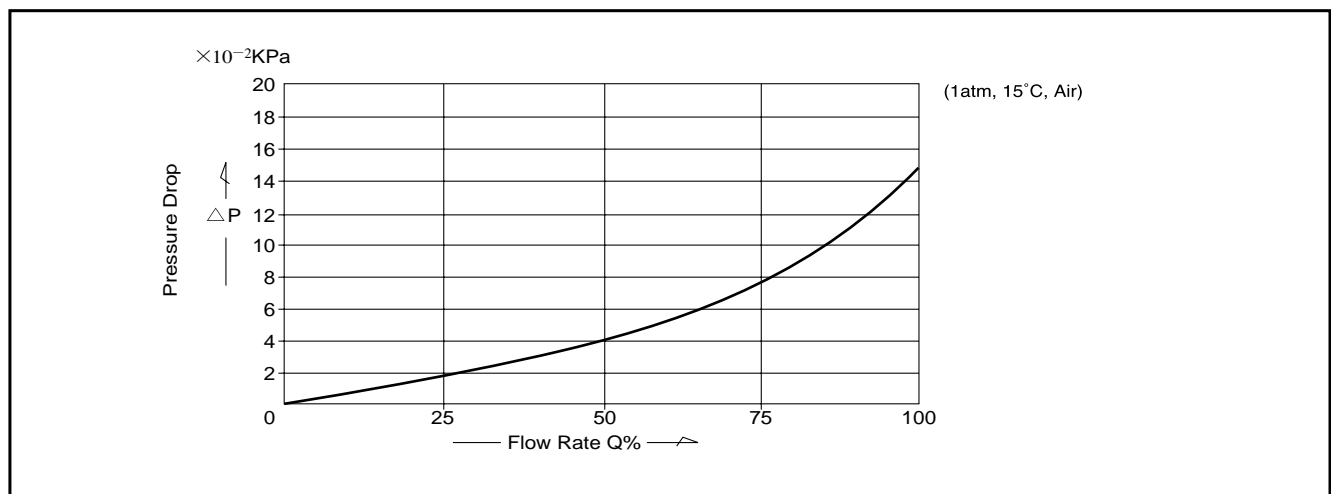
Flange Type JIS 10K FF

Material Nom. Size mm	BC6			Net Mesh
	L mm	H (approx.) mm	Weight (approx.) kg	
15	125	60	1.4	200
20	125	60	3.1	100
25	125	66	4.7	100
40	180	95	7.4	100

In case of BC6 material

Besides the strainers shown here, a temporary type for removing relatively large solids, etc. are also available. Cconsult the factory.

● Pressure Drop



■ MODEL CODE NUMBER

Item	Code No.								Description	
	①	②	③	—	④	⑤	⑥	⑦		⑧
Model	Y	F	1	—						Strainer
Application				1						For GAS OVAL
Size and Capacity Model					0	3				15mm or Rc1/2 (Applicable to GAS OVAL Model 50)
					0	4				20mm or Rc3/4 (Applicable to GAS OVAL Models 52, 53)
					0	5				25mm or Rc1 (Applicable to GAS OVAL Model 55)
					0	7				40mm or Rc1/2 (Applicable to GAS OVAL Model 56)
Material								A		Body: Copper alloy (BC6), Net: Stainless steel (SUS304)
Piping Connection									1	Flange type, JIS 10KFF

■ When making inquiries, please advise the following:

- Applied Fluid: _____
 Specific gravity; _____
 Operating temperature (°C) _____ min. _____ normal _____ max.
 Operating Pressure (MPa) _____ min. _____ normal _____ max.
- Flow Rate: _____ min. _____ normal _____ max. L/h, m³/h
- Connection: Nom. size _____ mm
- Receiving Instrument Model, Spec., Power Supply, Input Spec., Output Spec., etc.
- Strainer
 Connection: Nom. size _____ mm, Materials: BC6
 Mesh: 100, 200

The specification as of Dec., 2010 is stated in this GS Sheet. Specifications and design are subject to change without notice.



Sales Representative:
icenta CONTROLS Ltd
North Station Yard, Warminster Road, Wilton, Salisbury, SP2 0AT
Tel: 0845 895 1020 Fax: 0845 895 1021
Email: sales@icenta.co.uk
www.icenta.co.uk

GS.No.GBB318E

初版	改訂	印刷
04.12	10.12	